Thank you for purchasing this Esco Laboratory Animal Research Product. Please read this manual thoroughly to familiarize yourself with the many unique features and exciting innovations we have built into your new equipment. Esco provides many other resources at our website, www.escoglobal.com, to complement this manual and help you enjoy many years of productive and safe use of your Esco products.

User Manual

For Technical Service, contact
North America
Esco Technologies, Inc.
2940 Turnpike Drive, Units 15-16 • Hatboro, PA 19040, USA
Toll-Free USA and Canada 1-877-479-3726
Tel 215-441-9661 • Fax 215-441-9660
us.escoglobal.com • usa@escoglobal.com

Rest of World
Esco Micro Pte. Ltd.
21 Changi South Street 1 • Singapore 486 777
Tel +65 6542 0833 • Fax +65 6542 6920
www.escoglobal.com • mail@escoglobal.com

Viva

Dual Access
Animal Containment Workstation

Esco VDA User Manual
Version A - Released May 2011

Copyright Information

© Copyright 2011 Esco Micro Pte. Ltd. All rights reserved.
The information contained in this manual and the accompanying product is copyrighted and all rights are reserved by Esco.
Esco reserves the right to make periodic minor design changes without obligation to notify any person or entity of such change.
Viva® and Sentinel™ are registered trademarks of Esco.

"Material in this manual is provided for informational purposes only. The contents and the product described in this manual (including any appendix, addendum, attachment or inclusion), are subject to change without notice. Esco makes no representations or warranties as to the accuracy of the information contained in this manual. In no event shall Esco be held liable for any damages, direct or consequential, arising out of or related to the use of this manual."

Table of Contents

INTRODUCTORY PAGES

i Table of Contents
iii Warranty Terms and Conditions
v Introduction
v 1. Products Covered
v 2. Safety Warning
v 3. Limitation of Liability
v 4. European Union Directives on WEEE and RoHS
vii Declaration of Conformity

USER SECTION

1 Chapter 1 - Product Information
1 1.1 Quick View

3 Chapter 2 - Sentinel Control System
3 2.1 Sentinel Control System
4 2.2 Menu Options
4 2.2.1 Settings
5 2.2.2 Calibration
5 2.2.3 Admin
6 2.2.4 Set Mode
6 2.3 Alarm and Warnings

7 Chapter 3 - Basic Workstation Operation
7 3.1 Starting and Shutting Down the Workstation
7 3.1.1 Turning on the Workstation
7 3.1.2 Turning off the Workstation
7 3.2 Working in the Workstation
7 3.3 Decontamination and Disinfecting Agents

9 Chapter 4 - Maintenance
9 4.1 Scheduled Maintenance
9 4.2 Maintenance/Service Log

APPENDIX

Warranty Terms and Conditions

Esco products come with either a 1, 2 or 3 year limited warranty, depending on the product purchased, beginning on the date of shipment from any Esco international warehousing location. To determine which warranty applies to your product, refer to the appendix below.

Esco's limited warranty covers defects in materials and workmanship. Esco's liability under this limited warranty shall be, at our option, to repair or replace any defective parts of the equipment, provided if proven to the satisfaction of Esco that these parts were defective at the time of being sold, and that all defective parts shall be returned, properly identified with a Return Authorization.

This limited warranty covers parts only, and not transportation/insurance charges.

This limited warranty does not cover:

- Freight or installation (inside delivery handling) damage. If your product was damaged in transit, you must file a claim directly with the freight carrier.
- Products with missing or defaced serial numbers.
- Products for which Esco has not received payment.
- Problems that result from:
    - External causes such as accident, abuse, misuse, problems with electrical power, improper operating environmental conditions.
    - Servicing not authorized by Esco.
    - Usage that is not in accordance with product instructions.
    - Failure to follow the product instructions.
    - Failure to perform preventive maintenance.
    - Problems caused by using accessories, parts, or components not supplied by Esco.
    - Damage by fire, floods, or acts of God.
    - Customer modifications to the product
- Consumables such as filters (HEPA, ULPA, carbon, pre-filters) and fluorescent / UV bulbs.
- Esco is not liable for any damage incurred on the objects used on or stored in Esco equipment. If the objects are highly valuable, user is advised to have in place independent external preventive measures such as connection to a centralized alarm system.

Factory installed, customer specified equipment or accessories are warranted only to the extent guaranteed by the original manufacturer. The customer agrees that in relation to these products purchased through Esco, our limited warranty shall not apply and the original manufacturer's warranty shall be the sole warranty in respect of these products. The customer shall utilize that warranty for the support of such products and in any event not look to Esco for such warranty support.

Esco encourages all users to register their equipment online at www.escoglobal.com/warranty or complete the warranty registration form included with each product.

ALL EXPRESS AND IMPLIED WARRANTIES FOR THE PRODUCT, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES AND CONDITIONS OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE LIMITED IN TIME TO THE TERM OF THIS LIMITED WARRANTY. NO WARRANTIES, WHETHER EXPRESS OR IMPLIED, WILL APPLY AFTER THE LIMITED WARRANTY PERIOD HAS EXPIRED. ESCO DOES NOT ACCEPT LIABILITY BEYOND THE REMEDIES PROVIDED FOR IN THIS LIMITED WARRANTY OR FOR SPECIAL, INDIRECT, CONSEQUENTIAL OR INCIDENTAL DAMAGES, INCLUDING, WITHOUT LIMITATION, ANY LIABILITY FOR THIRD-PARTY CLAIMS AGAINST YOU FOR DAMAGES, FOR PRODUCTS NOT BEING AVAILABLE FOR USE, OR FOR LOST WORK. ESCO'S LIABILITY WILL BE NO MORE THAN THE AMOUNT YOU PAID FOR THE PRODUCT THAT IS THE SUBJECT OF A CLAIM. THIS IS THE MAXIMUM AMOUNT FOR WHICH ESCO IS RESPONSIBLE.

These Terms and Conditions shall be governed by and construed in accordance with the laws of Singapore and shall be subject to the exclusive jurisdiction of the courts of Singapore.

Technical Support, Warranty Service Contacts
USA: 1-877-479-3726
Singapore: +65 65420833
Global Email Helpdesk: support@escoglobal.com
Visit http://www.escoglobal.com/ to talk to a Live Support Representative
Distributors are encouraged to visit the Distributor Intranet for self-help materials.

Product Appendix, Warranty Listings

Biological Safety Cabinets, Laminar Flow Cabinets, HEPA-Filtered Cabinets (except Streamline brand)	The warranty periods for BSC may vary by country. Contact your local distributor for specific warranty details.
Laboratory Fume Hoods	2 years limited.
Ductless Fume Hoods	4 years limited for Ascent Opti, 6 years for Ascent Max.
Cleanroom Equipment	1 year limited.
Laboratory Ovens and Incubators	1 year limited.
CO_2 Incubators	2 years limited.
Containment/Pharma Products	2 years limited.
Ultralow Temperature Freezer	3 years limited. 60 months on Compressor.

The warranty period starts two months from the date your equipment is shipped from Esco facility for international distributors. This allows shipping time so the warranty will go into effect at approximately the same time the equipment is delivered to the user. The warranty protection extends to any subsequent owner during the warranty period. Distributors who stock Esco equipment are allowed an additional four months for delivery and installation, providing the product is registered with Esco. User can register product online at www.escoglobal.com/warranty or complete the warranty registration form included with each product.

Policy updated on 1st December 2011 (This limited warranty policy applies to products purchased on or after 1st January 2012)

Introduction

1. Products Covered

Esco Dual Access Animal Containment Workstation	
Electrical Rating	**1.2 meters (4 feet)**
220-240 V AC, 50Hz, 1Φ	VDA – 4A1
110-130 V AC, 60Hz, 1Φ	VDA – 4A2
220-240 V AC, 60Hz, 1Φ	VDA – 4A3

2. Safety Warning

- Anyone working with, on or around this equipment should read this manual. Failure to read, understand and follow the instructions given in this documentation may result in damage to the unit, injury to operating personnel, and / or poor equipment performance.
- Any internal adjustment, modification or maintenance to this equipment must be undertaken by qualified service personnel.
- The use of any hazardous materials in this equipment must be monitored by an industrial hygienist, safety officer or some other suitably qualified individual.
- Before you process, you should thoroughly understand the installation procedures and take note of the environmental / electrical requirements.
- In this manual, important safety related points will be marked with the symbol.
- If the equipment is used in a manner not specified by this manual, the protection provided by this equipment may be impaired.

3. Limitation of Liability

The disposal and / or emission of substances used in connection with this equipment may be governed by various local regulations. Familiarization and compliance with any such regulations are the sole responsibility of the users. Esco's liability is limited with respect to user compliance with such regulations.

4. European Union Directive on WEEE and RoHS

The European Union has issued two directives:

• Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE)

This product is required to comply with the European Union's Waste Electrical & Electronic Equipment (WEEE) Directive 2002/96/EC. It is marked with the following symbol:

Esco sells products through distributors throughout Europe. Contact your local Esco distributor for recycling/disposal.

• Directive 2002/95/EC on Restriction on the use of Hazardous Substances (RoHS)

With respect to the directive on RoHS, please note that this hood falls under category 8 (medical devices) and category 9 (monitoring and control instruments) and is therefore exempted from requirement to comply with the provisions of this directive.

Declaration of Conformation

In accordance to EN ISO/IEC 17050-1:2010

We, Esco Micro Pte. Ltd.
of 21 Changi South Street 1
Singapore, 486777
Tel: +65 6542 0833
Fax: +65 6542 6920

declare on our sole responsibility that the product:

Category : Dual Access Animal Containment Workstation
Brand : Viva
Model : VDA-4A1

in accordance with the following directives:

2006/95/EEC : The Low Voltage Directive and its amending directives
92/31/EEC : The Electromagnetic Compatibility Directive and its amending directives

has been designed to comply with the requirement of the following Harmonized Standard:

Low Voltage : EN 61010-1:2010
EMC : EN 61326-1:2006 Class B

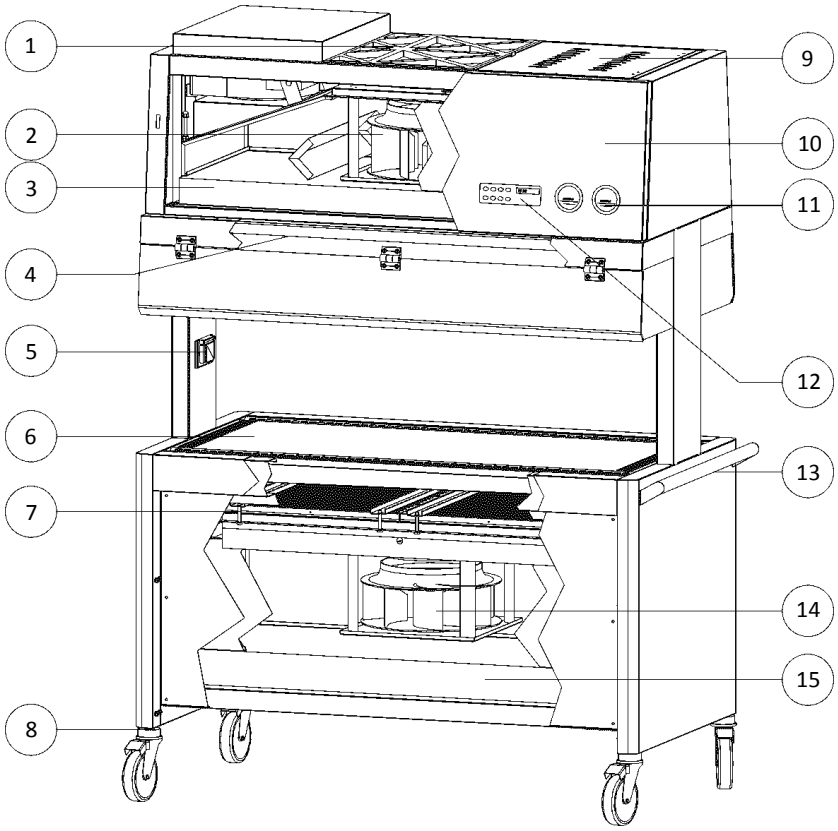
More information may be obtained from Esco's authorized distributors located within the European Union. A list of these parties and their contact information is available on request from Esco.

Lin Xiang Qian
Group CEO, Esco

This Declaration of Conformity is only applicable for 230V AC 50Hz units

Chapter 1 - Product Information

1.1 Quick View



1. Supply pre-filter
2. Supply blower
3. Supply ULPA filter
4. Fluorescent lamp
5. GFCI Electrical Outlet
6. Stainless steel single tray
7. Exhaust carbon filter
8. Castor wheel
9. Electrical panel
10. Hinged front panel
11. Minihelic™ pressure gauges
12. Esco Sentinel microprocessor control system
13. Ergonomic stainless steel handle
14. Exhaust blower
15. Exhaust ULPA filter

Chapter 2 – Sentinel Control System

2.1 Sentinel Control System

1. Fan Button
   - Turns on and turn off the fan.

2. Lamp Button
   - Turns on and turn off the fluorescent lamps.

3. Socket Button
   - Turns on and turn off the electrical socket (retrofit kit).
   - The maximum rating of all the outlets in the workstation is 5 A. If overload, the fuse will blow.

4. UV Button
   - This button is not used in this model.

5. Up (▲) and Down (▼) Arrow Button
   - In menu display: Move the menu options upwards and downwards.
   - In menu display: Increase and decrease corresponding value inside one of the menu options.
   - In normal display: Move the workstation upward and downward.

6. Set or Mute or Diagnostic Button
   - Proceed to the next step, level or sequence inside the menu options.
   - Enter diagnostic mode

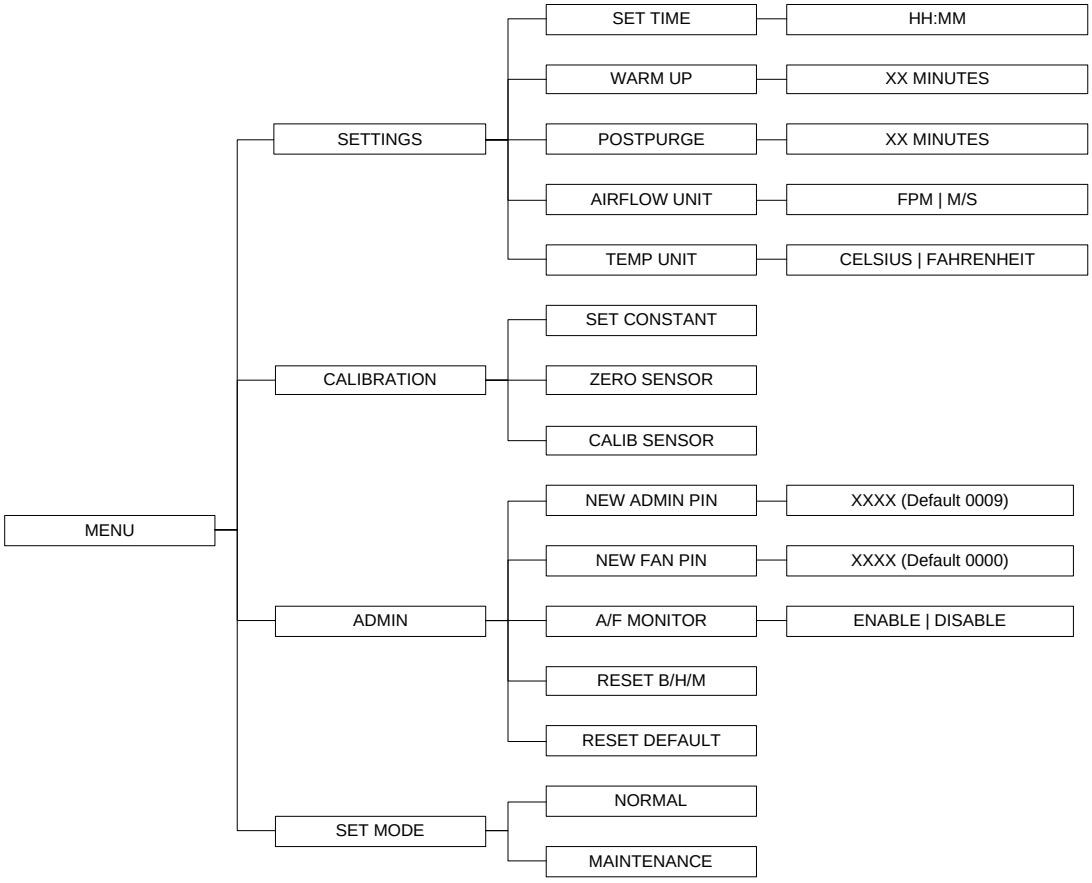
7. Menu Button

When you are entering menu options, the alarm will sound to indicate that the microprocessor is not monitoring the operation of the cabinet. No further warnings will be given.

   - To enter and exit from the menu options.
   - To go back to the previous level of the menu options.
   - To access maintenance mode from error condition.

2.2 Menu Options

Please refer to the following diagram for complete reference to all menu options available.



2.2.1 Settings

The user may use the settings menu function to customize the operation of the workstation to meet specific application requirements.

2.2.1.1 Set Clock (Time)

Users can set the time by increasing/decreasing the hour and minute values. The correct time will be maintained even after the unit is turned off.

MENU → SETTINGS → SET TIME → HH:MM

2.2.1.2 Warm Up Timer

There will be a period of warm-up, before the fan is fully functioning. This is to ensure that the sensors, the fan, and the control system are stabilized, as well as purging the work zone of contaminants. The default setting is 3 minutes and user can set it up to 15 minutes.

MENU → SETTINGS → WARM UP → XX MINUTES

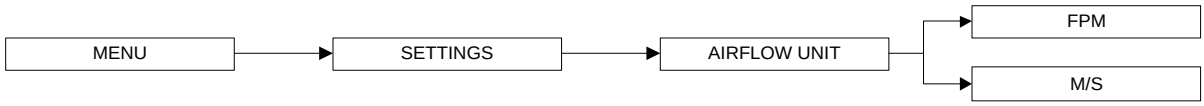
2.2.1.3 Post Purge Timer

After the user switches off the fan, there will be a period of post-purge. This feature is to ensure that all residual contaminants are purged from the work zone. The default setting is zero minute and user can set it from zero minute to 15 minutes. Setting it to zero minute will disable this feature. However, it is recommended to purge the workstation by leaving the fan on for around 3 minutes after the work is complete.

MENU → SETTINGS → POSTPURGE → XX MINUTES

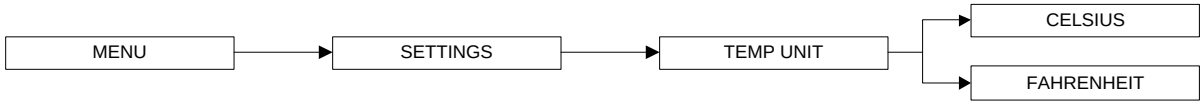
2.2.1.4 Airflow Unit Selection

Using this option, you can select the unit in which air velocity is measured and displayed. You can choose between meter per second (m/s) and feet per minute (fpm). When the fan is running and also during the calibration process, airflow measurement is displayed in the selected unit.



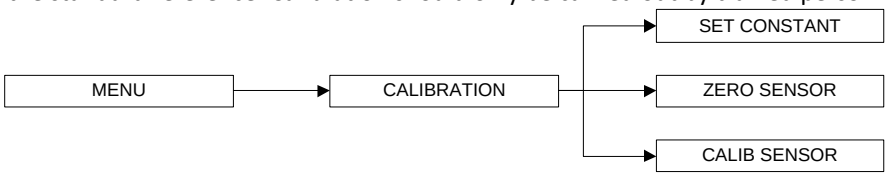
2.2.1.5 Temperature Unit Selection

Using this option, you can select the unit in which temperature is measured and displayed. You can choose between Celsius and Fahrenheit. The exhaust temperature is displayed in the selected unit.



2.2.2 Calibration

The purpose of calibration is to ensure the accuracy of the airflow display and alarm. This involves measuring airflow with reference instrumentation and establishing reference between airflow sensor(s) on the workstation to the standard reference. Calibration should only be carried out by trained personnel.



2.2.2.1 Set Constant

Every sensor manufactured by Esco has a specific Sensor Constant which is used for temperature compensation performed by the temperature sensor.

2.2.2.2 Zero Sensor

This option is to let the controller record the output voltage and correspond it to 0 m/s or 0 fpm.

2.2.2.3 Calib Sensor

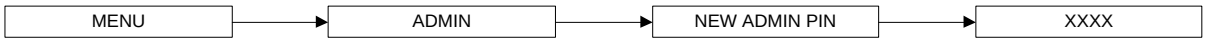
This option allows proper calibration and operation of the airflow sensor alarm.

2.2.3 Admin

The admin menu allows you to change both Fan and Admin. PIN, also to disable them (not recommended). The reset blower hour meter functions are usually used after you change the filter. While the reset default function will return the options in the settings menu to their factory settings.

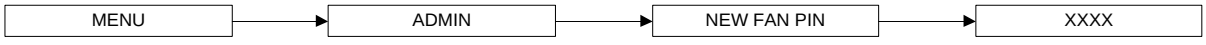
2.2.3.1 New Admin. PIN

Admin. PIN restricts access to MENU functions, including service functions, like calibration. User must enter four digits PIN before accessing MENU. Admin. PIN has higher priority and can be used to control the fan (override Fan PIN). Setting PIN to 0000 will disable this feature.



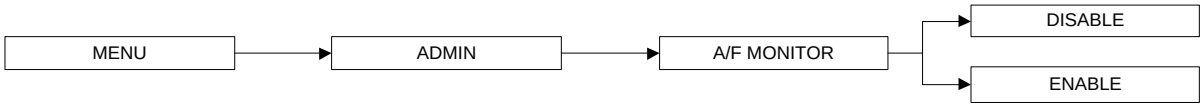
2.2.3.2 New Fan PIN

Fan PIN restricts access to fan control. As such, it can restrict access to operating the workstation by unauthorized personnel. Setting the PIN to 0000 will disable this feature.



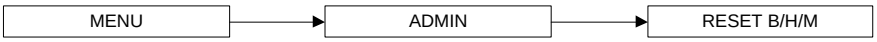
2.2.3.3 A/F Monitor

Whenever the air velocity falls below the fail point, the air fail alarm will be triggered. This option is used to enable/disable alarm.



2.2.3.4 Reset Blower Hour Meter

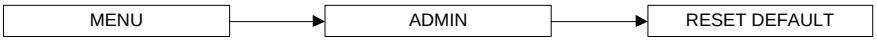
This option is used to reset the blower hour meter. The blower hour meter indicates how long the blower has been in operation. The value can also provide some help in setting up maintenance schedule, including filter change.



2.2.3.5 Reset Default

User can reset the default setting by choosing this option. The features being reset are warm-up period (3 minutes), post-purge period (0 minute), UV timer (0 minute), airflow unit (Metric), temperature unit (Celsius), Admin. PIN (0009), and Fan PIN (0001).

Note that the calibration settings cannot be reset as it may cause the workstation to operate in an unsafe manner. The hour meters cannot be reset either.



2.2.4 Set Mode

Workstation has two working mode, the default normal mode which is used in a day to day activity, and maintenance mode.

2.2.4.1 Normal Mode

Every time the workstation is restarted, this mode will be activated by default. In this mode, all alarms and interlocks are enabled.

2.2.4.2 Maintenance Mode

Maintenance mode should only be accessed by qualified personnel during maintenance. In this mode, all alarms are disabled and all interlocks are defeated.

2.3 Alarms and Warnings

Workstation uses alarms to indicate that the condition inside the workstation is not safe for the operator, so check the LCD display to understand the cause of these alarms.

AIR FAIL! indicates that there is airflow failure. The operator should check if there is any obstruction to the airflow, and correct it if possible. However, if the problem continues, the operator should stop working as the workstation's protection may have been compromised. Call service or Esco's local distributor.

Chapter 3 – Basic Workstation Operation

3.1 Starting and Shutting Down the Workstation

3.1.1 Turning on the Workstation

1. Turn on the fan by pressing the FAN button. Input the Fan PIN if asked (if PIN ≠ 0000). This will start the warm up procedure (default: 3 minutes). All buttons are diabled during warm up period.
2. The workstation is ready for work.

3.1.2 Turning off the Workstation

1. Turn off the fan by pressing the FAN button. Input the Fan PIN if asked (if PIN ≠ 0000). This will start the post purge procedure (default: 0 minute). All buttons are diabled during post purge period.

3.2 Working in the Workstation

- Surface-decontaminate the work area before and after using the workstation.
- Allow the workstation to purge any contaminant by allowing the blower to operate at least 3 minutes before and after using the workstation.
- Surface-decontaminate any item (including your arms) or apparatus with appropriate disinfectant before entering or exiting the work area.
- Place all items and apparatus in the safe working area.
- Ensure the air grilles are not obstructed by your arms or any other objects.
- While working in the workstation, move your hands slowly and in a controlled manner. Rapid movements may disrupt the air barrier, allowing contaminants to escape or enter the workstation.

3.3 Decontamination and Disinfecting Agents

- For stainless steel surfaces, all common disinfecting agents except chlorine-based ones are suitable.
- For powder coated surfaces, all common disinfecting agents are suitable. However, the workstation has been specifically evaluated for use with the following:
    - 1N hydrochloric acid
    - 1N sodium hydroxide
    - 1% quaternary ammonium compound
    - 5% formaldehyde
    - 5,000 ppm hypochlorite
    - 2% iodophor
    - 5% phenol
    - 70% ethyl alcohol
- Depending on the contaminant involved at the time of operating the workstation, there are various other types of disinfecting agents that may be used. The following table outlines the effectiveness of various disinfecting agents against the different types of contaminants.

Decontaminant	*Glutaral-dehyde*	*Peroxide/ Paracetic acid/ Acetic acid*	*Chlorine Dioxide*	*Chlorine*	*Iodophor*	*Alcohol*	*Phenolic*	*Quaternary Ammonium Compounds*
Classification	Sterilant	Sterilant	Sterilant	High Level	Inter-mediate	Inter-mediate	Inter-mediate	Low Level
Parameters for use:								
Concentration	2%	1%	0.01-0.1%	0.01-5%	0.5-2.5%	70-85%	0.2-3%	0.1-2%
Contact time (min.)	10-600	10-720	10-600	10-30	10-30	10-30	10-30	10-30
Stability > 1 week (1)	+		+		+	+	+	+
Agents:								
Bacterial Endospores	+	+	+	+/-				
Naked Viruses	+	+	+	+	+/-	+/-	+/-	
Mycobacterium	+	+	+	+	+	+	+	
Vegetative Bacteria	+	+	+	+	+	+	+	+
Enveloped Viruses	+	+	+	+	+	+	+	+
Characteristics:								
Inactivated by Organics		+		+	+	+	+/-	+
Residual	+	+	+	+/-	+		+	
Corrosive		+		+	+		+	
Flammable						+		
Skin Irritant	+	+	+	+	+		+	
Eye Irritant	+	+	+	+	+	+	+	
Respiratory Irritant	+	+	+	+	+	+	+/-	
Toxic	+	+	+	+	+	+	+	+
Use in workstations:								
Routine Surface Decon				+/-	+	+		+
Biohazardous Spill		+/-	+	+/-	+		+	+/-

(1) protected from light and air

+ = effective, +/- = results may vary, blank = not effective

Chapter 4 –Maintenance

4.1 Scheduled Maintenance

Proper and timely maintenance is crucial for trouble free functioning of any device and your Esco workstation is no exception to this rule. We strongly recommend that you follow the maintenance schedule suggested hereunder in order to obtain optimal performance from your Esco workstation.

No.	Description of Task to Perform	Maintenance to be carried out every					
		Day	Week	Month	Quarter	1 Year	2 Years
1	Surface decontaminate the work zone	√					
2	Workstation power-up alarm verification	√					
3	Thoroughly surface decontaminate the drain pan		√				
4	Clean the exterior surfaces of the workstation			√			
5	Check all service fixtures (where present) for proper operation			√			
6	Inspect the workstation for any abnormalities or malfunction				√		
7	Clean up stainless steel surfaces with MEK				√		
8	Re-certification					√	
9	Change the fluorescent lamps						√

Cleaning the workstation

- Clean the work surface with appropriate disinfectant agent and soap water afterward
- Use a damp cloth to clean the exterior surface of the workstation, particularly on the front and top in order to remove dust that accumulated there
- Use clean water to finish the cleaning and wash away any residue of disinfectant agent, soap water and glass cleaner
- For removing stubborn stains or spots on the stainless steel surface, make use of MEK (Methyl-Ethyl-Ketone). In such cases, make sure that you wash the steel surface immediately afterwards with clean water and some liquid detergent. Use a polyurethane cloth or sponge for washing. Regularly cleaning the stainless steel surface can help you retain the attractive factory finish.

Check the workstation's functionality

- Check the workstation's mechanical functionality
- Check the workstation's electrical functionality
- Check the workstation for any defect, repair immediately

Re-certification

All workstation must be re-certified annually by a certified engineer. See test report for recertification procedure.

4.2 Maintenance/Service Log

It is good practice (and in some cases regulatory requirement) to maintain a log of all maintenance work carried out on your workstation.

APPENDIX

LOG RECORD

Workstation : _____
Serial Number : _____
Person in Charge : _____

1. This log record should be used by the operator to record any new agent that has been introduced to the cabinet during its operation, problems encountered, etc.
2. Any decontamination procedure performed by either the user or the technician should be recorded down as well.
3. Please also record any major maintenance procedure performed by the service technician, for example: parts replacement, recertification, etc.

Date	Event	User Signature	Supervisor Signature

In case of emergencies, please call:
Name : _____
Cell Phone Number : _____
E-mail : _____